

Clinical perspective

# Feasibility and acceptability of implementing a patient education pressure injury prevention care bundle in acute care: an interview study

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## Abstract

**Aim** To describe and compare patients' and nurses' perceptions of the feasibility and acceptability of a patient education pressure injury prevention (PIP) care bundle (PPIPCB).

**Methods** Semi-structured patient interviews and nurse focus groups were conducted in three medical units of an Australian metropolitan hospital. Qualitative data were

gathered on participants' experiences of PIP education on hospital admission and their views of the acceptability of implementing a PPIPCB. Following inductive content analysis of the data, the categories were comparatively analysed and the themes defined.

**Results** Patients reported receiving limited education from nurses, while heavy workloads were a major barrier to nurses delivering patient education. Patients and nurses valued PIP education and wanted more time and resources to engage in this activity. The PPIPCB was viewed by both patients and nurses as a useful resource that could facilitate information sharing between nurses, patients and their families.

**Conclusion** Nurses have a key role in educating patients about PIP care, with accessible resources needed to facilitate this activity. Our PPIPCB provides patients and nurses with simple to implement strategies that could increase patients' participation in their care.

## Impact

### What is already known?

- Hospital-acquired pressure injuries (HAPI) are a patient safety and quality of care issue
- Patient participation in their PIP care is a strategy that can reduce the risk of HAPI.
- In acute care hospitals, there is limited availability of patient education resources to increase patient participation in their PIP care.

### What does this implementation project contribute?

- Heavy workloads reduced nurses' ability to provide patients with PIP education on hospital admission.
- Patients and nurses valued PIP education.

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- Access to PPIPCBs that outline simple prevention strategies can encourage patients to participate in their care.

## Background

Hospital-acquired pressure injuries (HAPI) are preventable skin/tissue injuries resulting from unrelieved pressure, shear or friction<sup>1</sup>. For patients, HAPI result in pain, infection<sup>1,2</sup> and an increased hospital length of stay by up to 20 days<sup>3</sup>. HAPI are a global problem, with Li et al.'s<sup>4</sup> meta-analysis of almost two million hospital patients reporting a pooled estimate of pressure injury (PI) prevalence of 12.8% and a pooled HAPI rate of 8.4%. During 2016, treating HAPI was estimated to cost US\$26.8 billion in the US<sup>3</sup> and £5.3 billion in the United Kingdom<sup>5</sup>. In Australia during 2012–13, HAPI treatment costs were estimated at A\$1.8 billion<sup>6</sup>, hence preventing HAPI is a global priority. International clinical practice guidelines recommend pressure injury prevention (PIP) strategies including repositioning, support mattresses, risk assessment, nutritional and skin care, and patient education<sup>1,7</sup>. However, inconsistencies in their implementation are reported<sup>8,9</sup>.

Care bundles are three to five evidence-based practices that, when delivered together, can prevent and manage health issues<sup>10</sup>. Centred on patient participation in their care, a PIP bundle and associated resources are freely available (<http://bit.ly/PIPToolkit>) which aim to improve patients' health literacy and educate them on preventative strategies they can implement during their hospitalisation<sup>11</sup>. This PPIPCB has been previously tested<sup>12</sup>; however, its use in routine clinical practice, including barriers and facilitators, has not been examined. The results of this study will support clinicians tasked with preventing HAPI and improving patient PIP engagement in the hospitalised setting.

## Method

### Aim

To describe and compare patients' and nurses' perceptions of the feasibility and acceptability of a PPIPCB in routine clinical practice, including barriers and enablers. The COnsolidated criteria for REporting Qualitative research (COREQ) checklist was followed<sup>13</sup>.

### Design

A descriptive qualitative study.

### Setting

Three, 28-bed adult acute medical units (respiratory, general medical and infectious disease) at a large metropolitan Australian hospital. Each patient's bedside has an interactive touch screen (patient entertainment system [PES]) with 24/7 unrestricted access to entertainment and safety videos<sup>14</sup>.

### Sample

Patients and nurses from the three wards were recruited once to the study. A purposive sample of nurses were

recruited and a consecutive sample of patients, regardless of their PI risk, were recruited. Patient inclusion criteria were: aged  $\geq 18$  years, provided written consent, hospitalised for  $\geq 48$  hours, and could view and read the PPIPCB. Patient exclusion criteria were: receiving palliative or end-of-life care. All permanently employed nursing staff could be recruited. Purposive sampling using maximum variation (age, gender, professional role, experience)<sup>15</sup> was used to capture a range of nurses' perspectives<sup>16</sup>.

## Implementation

### PPIPCB

The PPIPCB consists of a professionally developed 6-minute video, colour poster and brochure outlining three patient PIP strategies – keep moving, eat a healthy diet, and look after your skin<sup>12</sup>. To cater to a diverse range of hospitalised patients, the PPIPCB is available in nine languages (Arabic, Chinese, Croatian, English, Greek, Italian, Somalian, Spanish, Vietnamese)<sup>12</sup>.

### Data collection

Prior to data collection, the nine videos were uploaded onto the PES and colour posters and brochures were printed to retain at the bedside. The site research fellow (SL) conducted staff information sessions outlining the study purpose and collection methods. In September 2019, the researcher (SL), with doctoral expertise in PI and qualitative experience, conducted face-to-face patient interviews and nurse focus groups (one per unit) in a quiet area. The nurse in charge assisted in identifying potential patient and nurse participants. All eligible participants invited to the study were informed about the study, anonymity, withdrawal process and the research team's goals and study site relationship. Potential participants were given time to consider their decision, with a written consent gathered from those willing to be recruited. Interviews were digitally recorded.

*Patient semi-structured interviews:* Using an interview guide, patient participants were asked about the PIP education they received on admission. They viewed the PPIPCB and their perceptions of the information and strategies were discussed. Finally, patients were asked how they might incorporate the information into their care, including barriers and facilitators, and how we could implement the PPIPCB in the unit. Self-reported de-identified demographic and clinical data were gathered.

*Nurse focus groups:* The questions, guided by the Theoretical Domains Framework<sup>17</sup>, focused on professional role, knowledge, decision making, environmental stressors, barriers and facilitators. Nurses were asked about who educated patients about PIP during their admission, including the information delivered. Next, nurses viewed the PPIPCB and were invited to comment on the information and strategies. Barriers and facilitators were explored regarding PPIPCB implementation. De-identified demographic and professional data (age, gender, years of clinical experience,

highest qualification, working hours) were collected.

The interview/focus group questions were developed by the research team who have expertise in PI and qualitative research. Following pilot-testing in the first interview/focus group, minor changes to the question sequence were made, with the PPIPCB shown after the first two questions were asked<sup>18,19</sup>. Following each interview/focus group, the researcher (SL) documented detailed content summaries on key discussion points.

### Ethics

Ethical approvals were granted by the relevant hospital and university Human Research Ethics Committees [HREC/2019/QGC/49756; GU/2019/375].

### Data analysis

Prior to analysis, the audio data files were professionally transcribed. The researcher (SL) checked the transcripts for accuracy and deleted filler statements (e.g. “um”). Participant anonymity prevented the returning of transcripts for correcting. Demographic and professional data were entered into SPSS<sup>20</sup>, cleaned, and checked for accuracy. Depending on the data distribution, descriptive statistics were computed using absolute (n) and frequencies (%), mean [standard deviation (SD)] or median (interquartile range [IQR]).

Inductive content analysis<sup>16</sup> then comparative analysis<sup>21</sup> of the qualitative data was undertaken. First, the patient and nurse data were separately analysed using inductive content analysis, with an iterative and reflexive process followed to identify data patterns and meanings<sup>16</sup>. Two researchers (SL, JD) reviewed the data by re-reading the transcripts<sup>16</sup>. Next, data coding occurred, with similar codes organised into sub-categories, which were subsequently arranged into categories and defined<sup>16</sup>. The categories were comparatively analysed, with the differences and similarities compared and contrasted, and the resulting themes defined (SL, JD)<sup>21</sup>. This narrative data synthesis resulted in a deeper understanding of the similarities and differences in patients' and nurses' perceptions of the feasibility, acceptability, barriers and enablers to implementing the PPIPCB<sup>21</sup>. SL and JD lead the analysis, and the research team agreed on the final analysis based on consensus<sup>16</sup>.

Qualitative research rigour was established through credibility, transferability, dependability and confirmability<sup>22</sup>. Credibility was achieved by triangulation (multiple data sources), retaining participants own words throughout the analysis, and the research team discussing the preliminary findings<sup>22</sup>. Transferability or generalisability of findings was achieved through purposive sampling and context selection; hence gathering a range of participant perspectives and thick data descriptions<sup>22</sup>. Dependability was achieved by triangulation and documenting research processes and procedures to ensure consistency and reliability of data<sup>22</sup>. Confirmability, or neutrality, was established through triangulation, reflexive

discussions, detailed field notes and documenting a data analysis codebook<sup>22</sup>.

## Results

### Demographic data

Ten medical patients were approached, with nine recruited and interviewed for up to 15 minutes each. The patient sample was mostly female (n=7; 78%) and their age ranged from 20–83 years, with a median of 71 years (IQR=27:80). Just over half (n=5; 55.5%) of patient participants were independently mobile. No participants had an existing PI.

Twenty nurses participated in the three focus groups, which lasted between 30–40 minutes each. The nurse sample were mainly female (n=15; 75%) and were registered nurses (n=17; 85%). Nurse participants' age ranged between 22–68 years (Mean=40; SD=13). Most were degree level qualified (n=11; 58%) with a median 7.0 years (IQR=3:10) of clinical experience.

### Patients' perceptions

Two categories (Table 1) emerged from the patient data: improving patient access and awareness of PIP on hospital admission; and providing resources for nurses and patients to engage in PIP education.

#### *Improving patient access and awareness of PIP on hospital admission*

On hospital admission, patients had little awareness of PI, prevention and their potential negative impacts. As one patient stated, “We didn't understand what a pressure injury was”. Furthermore, most patients reported receiving limited or no PIP education from nurses, “They briefly said, you know that there's info if you want to look at it it's on there [PES]. They didn't say what was on it they just said, patient information”. All patients remarked it was important for them to know more about preventing PI, yet “it wasn't explained to us... on admission”. Most patients also indicated they feared viewing graphic wound images during PIP education, saying “That's to avoid... we thought it contained gruesome info”.

After viewing the PPIPCB, patients reported the information increased their awareness of PI and their prevention, claiming “Very useful, because I didn't know any of it before”. Reflective of all patients, “The DVD [video] provides valuable and easy to use information for patients who are in hospital. It is good quality, simple messages [keep moving, eat a healthy diet and look after your skin] and easy to access on the PES”. Some patients confidently deployed the PPIPCB video on the PES platform, while others were reluctant to access the resource, saying “I would feel very confident using the DVD [video] and other resources as long and I was told where to access them”. All patients indicated they could incorporate all or some of the suggested PPIPCB strategies into their care if they received more guidance from nurses, saying “Well, it's something that you don't think of until you're aware of it”.

*Providing resources for nurses and patients to engage in PIP education*

Patients wanted more education from nurses so they could be more involved in their PIP care. As one patient remarked, “I already had a bit of prior [PI] knowledge... [so] I was trying to move around as much as possible”. Many patients wanted nurses to facilitate their engagement with the PPIPCB on the PES by “The nurse pulling the computer over, clicking on the folder and saying, ‘look this is what it looks like, it’s here’”. Other patients suggested the healthcare organisation should develop a rolling screensaver on the PES that directed patients to the information – “If it was just on that [PES] as a screensaver and it was just continually going and... you want to click in and.... watch that video”. Patients valued individualised education sessions and reported the PPIPCB allowed them to select their preferred modality (e.g. video, poster, brochure). As one patient indicated, “I think it would just give me a little bit of information in terms of a flyer before I did gravitate towards watching the video”.

Several factors that might cause patients to disengage with the PPIPCB were highlighted. Technology accessibility and

*Table 1. Inductive content analysis of patients’ and nurses’ perceptions of PPIPCB*

Category	Sub-category
<b>Patients’ perceptions</b>	
Improving patient access and awareness of PIP on hospital admission	Patients wanting PIP education from nurses on admission Increasing patient awareness of PI and their prevention
Providing resources for nurses and patients to engage in PIP education	Connecting patients with education resources on preventing PI Patients disengaging with PIP education
<b>Nurses’ perceptions</b>	
Nurses providing education to patients about PI risk and prevention	Nurses educating patients about preventing PI on hospital admission Nurses using different approaches to raise patients’ awareness of their PI risk and prevention strategies
Nurses accessing suitable resources to educate patients and families about preventing PI on admission	Nurses’ perceptions of the barriers to using the PPIPCB Nurses having access to resources to educate patients and families about preventing PI

reliability reduced patients’ ability to engage with education resources, claiming “Using the touchscreen and it didn’t work [so] I was really put off by it”. Concerns were also raised about physical and cognitive impairments that would restrict patient access to the PPIPCB – “If you were too tired, deaf or had a medical problem that stops you from accessing the PES or reading/understanding the information”.

**Nurses’ perceptions**

Two categories (Table 1) were produced from nurse data: nurses providing education to patients about PI risk and prevention; and nurses accessing suitable resources to educate patients and families about preventing PI.

*Nurses providing education to patients about PI risk and prevention*

Nurses acknowledged it was their role to educate patients about preventing PI on hospital admission, saying “The primary nurse educates patients about pressure injury prevention”. Their goal was to raise patients’ awareness of their PI risk and prevention strategies, “Telling them that we’re going to get them to sit up in the chair” and “I always tell them I’ve got to move them off their bottom because it’s getting red”. Reflective of other nurse participants, one nurse described how she informs patients about “How easy it is to get them [PI] because people really have no idea how easy just a redness can actually turn into broken skin”.

Nurses conceded PIP education was often rushed and situated in a vast amount of health and safety information delivered to patients on admission – “Workload pressure, but there’s also [nurse] awareness. There’s so much pressure on bedside nurses to go through the 27 steps of a patient admission”. All nurses recognised hospital admission was a stressful and busy time for patients, resulting in some either being unwilling or too ill to fully participate in this education session, saying “[education occurs] on orientation if the patient is up to it and they’re accepting to take that”. Nurses educated patients about repositioning and moisturising their skin via face-to-face conversations, demonstrations and during care delivery – “We get them to sit up in the chair for lunches and breakfast, because they’ve got to keep moving”, and saying they “Help [patients] with the moisturising... we usually have moisturiser in each room”.

*Nurses accessing suitable resources to educate patients and families about preventing PI on admission*

Most nurses considered the existing hospital PI education resources were unenticing. In comparison, nurses reported the PPIPCB was a high quality and engaging production and a valuable patient education tool for them to use, especially with patients from non-English speaking backgrounds, saying “It’s an education tool for us, because sometimes those things are hard to explain without visual cues” and “The video’s good, at least it’s a different way of delivering the information than us just telling them [patients]”. All nurses agreed some patients with impairments (cognitive,



hearing, visual) or those who are unwell would not be able to use the education resource, saying “Those with cognitive impairment, they wouldn’t understand it, or they’d forget it after they’ve seen it”. Others suggested families and carers could access the PPIPCB and then help patients to be involved in their PIP care – “But I think with carer support that could be good information to complement their existing knowledge or inform them of a concept which might be more [enquiring] to them”.

### Comparative analysis

Three comparators were used: PIP education on admission; PPIPCB as an education resource; and implementing PPIPCB, with two themes emerging – contrasting experiences of PIP education on admission, and increasing information sharing between nurses and patients on admission through well-designed and accessible PIP education resources (Table 2).

#### *Contrasting experiences of PIP education on admission*

Patients and nurses had different experiences of PIP education on admission. Patients stated they received little or no PIP education from nurses on admission, confirming why their awareness of PI and prevention strategies was limited. Hospital patients are powerless to know how and where to access PIP education information, instead relying on nurses to guide them. Furthermore, PI awareness is often beyond the personal experience of most hospital patients and may be considered by many to be a challenging issue to discuss.

In contrast, nurses indicated hospital patients receive PIP education on admission with the aim of raising their awareness of PI risks and prevention. Workload pressures meant nurses delivered patient PIP education in a rushed manner which can result in patients experiencing surface learning of complex PI concepts. In addition, it is likely nurses lacked the time to check for patient learning and facilitate patients’ application of new PIP knowledge and strategies. Despite these differences and similarities, patients and nurses wanted more resources and time to engage in PIP education on admission because it raised their PI awareness and the importance of prevention.

#### *Increasing information sharing between nurses and patients on admission through well-designed and accessible PIP education resources*

Education has its greatest impact when it is individualised. Together, patients and nurses overwhelmingly valued the PPIPCB as an education tool that should be implemented into clinical practice. Most valued the resource quality, the ability to individualise education sessions, its ease of use and simple messaging. Nurses appreciated the alignment of the suggested patient strategies to the information they currently deliver. Nurses acknowledged difficulties in accessing individualised education for culturally diverse patients and families. Hence, the multi-lingual PPIPCB resources were viewed as filling this practice gap (Table 2). Nurses confirmed

delays and costs associated with accessing professional interpreters. Similarly, patients and families from a non-English speaking background may be reluctant to request these services. As such, having easy access to multi-lingual PIP resources may increase culturally diverse patients and family’s willingness to engage with the PPIPCB and their care (Table 2).

To gain the greatest benefits from patient education, active participation is needed. Patients and nurses both acknowledged some unwell or impaired patients would be unable to effectively use the PPIPCB. However, nurses suggested families and carers could watch the video and encourage unwell or impaired patients to reposition. Patients appreciated they could access the PPIPCB in a flexible and autonomous manner, yet many wanted nurses to actively engage with them in PIP education. In contrast, nurses perceived the resource could reduce their admission workload by allowing patients to view the video while they completed other admission requirements. While likely unintentional, this passive approach to patient education is probably due to the workload pressures nurses experience during the complex hospital admission process. Patients and nurses expressed similar views regarding the value of the PPIPCB as an education resource to increase information sharing on PIP.

## Discussion

This study examined medical patients’ and nurses’ perceptions of the feasibility and acceptability, including barriers and enablers, of implementing a PPIPCB in their clinical unit. This study provides insights into the differing patient and nurse experience of PIP education on hospital admission and the value of providing a well-designed PPIPCB to promote the active sharing of complex PI concepts aimed at encouraging patients to participate in their care.

Most patient participants reported their PIP awareness was limited on admission; a new study finding. In contrast, McInnes et al.<sup>23</sup>, found 86% of their acute care patient participants understood the concept of PI. Both studies were conducted in metropolitan areas and participants were a similar age, so the differences in findings could be that our patients had limited access to PIP information in the community, a factor previously reported<sup>24</sup>. Nurses also acknowledged most patients were unaware of how quickly PI develop. Recently, Durrant et al.<sup>24</sup> found community-based patients could not adequately explain why their PI developed. Examining hospital patients’ comprehension of PI and PIP is suggested and will help to establish if this lack of knowledge is widespread.

Nurses play a key role in educating patients about PIP<sup>25</sup>. Yet, our patient participants indicated they received limited PIP education from nurses on admission, confirming previous findings<sup>23,26,27</sup>. Nurses in our study stated they delivered PIP education to patients on admission; however, they recognised

Table 2. Comparative analysis of patients' and nurses' perceptions

Theme	Comparator	Differences and similarities	
		Patient content analysis category	Nurse content analysis category
		<b>Improving patient access and awareness of PIP on hospital admission</b>	<b>Nurses providing education to patients about PI risk and prevention</b>
Contrasting experiences of PIP education on admission	PIP education on admission	Patients received little PIP education from nurses on admission	Nurses deliver PIP education to patients on admission
		Patients had limited awareness of PI and prevention strategies	Nurses educate patients to raise their awareness of PI and prevention strategies
		Nurses not referring patients to the PI education resources	Workload pressures reduces nurses' ability to deliver patient PIP education on admission
		Patients fear of graphic PI images resulted in their disengagement with PIP education resources	Nurses consider current patient PIP education resources are unengaging
		Patients wanted more PIP education on admission to raise their awareness of PI and prevention strategies	Nurses wanting more time to deliver PIP education to patients on admission
		<b>Providing resources for nurses and patients to engage in PIP education</b>	<b>Nurses accessing suitable resources to educate patients and families about preventing PI on admission</b>
Increasing information sharing between nurses and patients on admission through well-designed and accessible PIP education resources	PPIP CB as an education resource	Patients valued the PPIP CB quality and components (video, poster, brochure)	Nurses valued the PPIP CB quality and components including multiple languages
		PIP strategies easy to remember for patients, families and carers, and simple to implement	PIP strategies simple for nurses to explain to patients, families and carers
		PPIP CB is a useful education tool for patients, families and carers	PPIP CB is a valuable education tool for nurses, patients, families and carers
		Patients select the PPIP CB components to suit their learning style	PPIP CB helps nurses to deliver complex PI information to patients in an easy to understand manner
	Implementing PPIP CB	PPIP CB is a suitable patient education resource	PPIP CB is a suitable education resource for many patients
		Patients want nurses to engage with them and the PPIP CB	Nurses can direct patients to watch the PPIP CB video on the PES
		Most patients should be able to use PPIP CB resource	Cognitive, visual or hearing impaired and unwell patients will have difficulty using the PPIP CB resource
		Families and carers can use the PPIP CB resource to encourage patients to participate in PIP	Families and carers can use the PPIP CB resource and encourage patients to participate in PIP

workload pressures impeded their ability to consistently deliver quality education sessions, an issue reported by others<sup>28,29</sup>. Furthermore, the admission process is stressful, complex and demanding for patients and nurses<sup>28-30</sup> which may explain our findings. For patients, in addition to being unwell, hospital admission results in separation from familial support networks, being in an unfamiliar environment<sup>30</sup>, and receiving complex health information<sup>26,27</sup>. For nurses, admitting a patient to their unit involves the hasty completion of complex administrative and clinical tasks<sup>28,29</sup>. Heavy

nurse workloads impinge on patient education time and is a modifiable factor<sup>29,31</sup> that management can address.

Our patient and nurse participants wanted more time and resources to engage in PIP education, with limited access to resources causing nurses to experience increased stress<sup>29</sup>. Hospital admission might not be the optimal time to deliver the bulk of PIP education, with consideration given to integrating education throughout their routine care, including handover throughout the course of their hospital stay<sup>32</sup>.

Offering multiple opportunities to deliver the PIP education might help patients to consolidate their learning<sup>27</sup> and confidently participate in their care<sup>2</sup>.

Some patients were reluctant to engage with the PPIPBCB because they feared viewing graphic PI images, a new study finding. Graphic images on cigarette packaging are used in public health messaging as a way to change behaviour<sup>33</sup>. Patients' prior experience with this approach in the community or just their fear of medical images might explain our findings, and is a timely reminder for clinicians using visual PIP education resources<sup>33</sup>. Deliberate, sensitive and quality patient education relies on establishing relationships based on mutual trust<sup>2,24,27</sup> from which fear and other barriers can be identified and alleviated.

PIP education is an important component of the international PIP clinical practice guidelines<sup>1,7</sup>, yet access to quality patient PIP education resources was a limitation reported by nurses in our study. Barakat-Johnson et al.<sup>29</sup> reported nurses who experienced limited access to PIP resources reported "a sense of powerlessness to provide quality care" (p. 98), as delivering quality PIP education relies on the availability of well-designed, quality and appropriate resources<sup>11,24</sup>. An Australian study of publicly available patient PIP education material on 212 Victorian health service (public, private and independent) websites found only 34.5% had patient information available<sup>27</sup>. It appears the scarcity of quality patient PIP information and education is widespread. Hence, increasing access to well-developed and patient-centred PIP education material is urgently needed.

PIP patient education resources need to be accessible, engaging, non-threatening and mutually beneficial, with patients and nurses using the resources independently and together<sup>11,26,27</sup>. Several authors have reported improvements in patient PI knowledge and care participation following engagement with an education intervention<sup>26,34</sup>. The nurses in this study overwhelmingly agreed the PPIPBCB was a feasible and acceptable education resource for use in their wards because of the multiple education strategies (video, brochure, poster), which increased independent and mutual learning. The availability of multi-lingual patient PIP information is found to be lacking<sup>27</sup>, with only four education resources published on Victorian hospital websites, hence the multi-lingual availability of the PPIPBCB in this study increased its accessibility. Nurse participants reported unwell, cognitively impaired and patients with reduced hearing and vision were less likely to access the PPIPBCB, confirming previous research<sup>29</sup>. Using a solution-based approach, nurses indicated family members and carers could engage with the PPIPBCB and encourage patients to participate in their PIP care. We know that patient PIP education facilitates patient participation<sup>2</sup>, and can contribute to reducing HAPI<sup>12</sup>, yet there are significant gaps in the availability of suitable PIP education resources for both patients and nurses, an area requiring prompt attention.

## Limitations

We acknowledge the following limitations. This descriptive study was conducted on medical wards at a single study site, limiting the generalisability of the findings. Our nurse sample was mainly female, meaning the perceptions of male nurses is under-represented. Focus group participants do not have equal speaking time so, to obtain a range of views, the researcher encouraged quieter participants to contribute. To ensure participants' own views were expressed, the researcher advised all opinions were valued.

## Implications for future research

The study PPIPBCB facilitates nurse and patient education. More research is needed to understand patients' PI knowledge and awareness on admission, whilst the best time to educate patients' needs further exploring. With greater access to mobile phones, further research is encouraged into patients' and nurses' acceptability and impact of technologies such as web applications (apps), in offering multiple learning opportunities to access PIP education over the course of their hospital stay.

## Conclusions

Patients and nurses had different experiences of patient PIP education. Participants reported the PPIPBCB was a valuable resource that simplifies complex health PI information. For patients, the PPIPBCB provided flexible and individualised information. For nurses, the PPIPBCB aided in their delivery of PIP patient education and outlined easy to implement strategies. Finally, it was agreed the PPIPBCB could facilitate increased PI awareness and prevention for use by nurses, patients, families and carers.

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## Conflict of interest

The authors declare no conflicts of interest.

## Ethics statement

Not applicable.

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